Title: Economic Policy Uncertainty and Capital: Structure Choice Evidence from China

Author: Guangli Zhang Jianlei Han Zheyao Pan Haozhi Huang

PII: S0939-3625(15)00044-8
DOI: http://dx.doi.org/doi:10.1016/j.ecosys.2015.06.003
Reference: ECOSYS 524

To appear in: *Economic Systems*

Received date: 9-6-2014
Revised date: 2-3-2015
Accepted date: 13-6-2015

Please cite this article as: Zhang, G., Han, J., Pan, Z., Huang, H.,Economic Policy Uncertainty and Capital: Structure Choice Evidence from China, *Economic Systems* (2015), http://dx.doi.org/10.1016/j.ecosys.2015.06.003

Highlights

- Chinese firms' leverage ratios decrease when the economic policy uncertainty increases.
- This effect is heterogeneous across firms in terms of regional marketization, ownership and bank-firm relationship.
- This effect is sourced from the deterioration of the external financing environment imposed by economic policy uncertainty
- Firms adjust their financing structures by using more trade credit when economic policy uncertainty increases.

Economic Policy Uncertainty and Capital Structure Choice: Evidence from China

Guangli Zhang[a], Jianlei Han[b], Zheyao Pan[b], Haozhi Huang[c]

[a] School of Finance, Renmin University of China, China
[b] UQ Business School, University of Queensland, Australia
[c] School of Economics, Finance and Marketing , RMIT University, Australia

First Version: April 2014
This Version: March 2015

Abstract

This paper studies how economic policy uncertainty affects corporate capital structure for Chinese listed firms from 2003 to 2013. We show that as the degree of economic policy uncertainty increases, firms tend to lower their leverage ratios. However, firms that are from regions with lower degrees of marketization, are state-owned or have prior bank-firm relationships, mitigate the negative effect of policy uncertainty. Moreover, we provide consistent evidence that this negative effect is sourced from the deterioration of the external financing environment. We also find that firms adjust their financing structures by using more trade credit when economic policy uncertainty increases. Our results are robust to sample selection, data frequency, model specification and endogeneity.

Key words: Economic Policy Uncertainty; Capital Structure; Trade Credit; China

JEL classification: G18, G32, G38, E66

**E-mail:* guanglizhang1987@126.com, j.han@business.uq.edu.au, z.pan@business.uq.edu.au, haozhi.huang@rmit.edu.au. We thank three anonymous referees for insightful suggestions and comments. Pan would like to thank the research funding provided by the University of Queensland business school.

Economic Policy Uncertainty and Capital Structure Choice: Evidence from China

Abstract

This paper studies how economic policy uncertainty affects corporate capital structure for Chinese listed firms from 2003 to 2013. We show that as the degree of economic policy uncertainty increases, firms tend to lower their leverage ratios. However, firms that are from regions with lower degrees of marketization, are state-owned or have prior bank-firm relationships, mitigate the negative effect of policy uncertainty. Moreover, we provide consistent evidence that this negative effect is sourced from the deterioration of the external financing environment. We also find that firms adjust their financing structures by using more trade credit when economic policy uncertainty increases. Our results are robust to sample selection, data frequency, model specification and endogeneity.

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1. Introduction

Due to the nature of policy decision-making and implementation processes, economic policies typically generate a large amount of uncertainty, which can impose profound impacts on the financial market and firm behaviour. Using alternative policy uncertainty measures, previous literature has explored the association between economic policy uncertainty and asset prices (Pastor and Veronesi, 2013; Brogaard and Detzel, 2012), corporate investment decisions (Julio and Yook, 2012; Gulen and Ion, 2013) and IPO activities (Colak *et al.*, 2013). However, our understanding towards the effect of economic policy uncertainty on firms' capital structure choices, a core research question in corporate finance, is still limited. Meanwhile, prior research in this area has rarely paid attention to emerging or transition economies, where the financial markets tend to be highly regulated and prone to being influenced by government policy (Erb *et al.* 1996).

As an attempt to fill this void, we propose the current study to empirically examine how economic policy uncertainty affects firms' capital structure decisions in China — a typical emerging financial market. We find strong evidence that Chinese firms' leverage ratios are negatively related to economic policy uncertainty, and that this effect is more pronounced for firms that are in regions with higher degrees of marketization, are non-state owned or have no prior bank-firm relationship. We also identify the underlying mechanism of this effect as the deterioration of the external financing environment caused by policy uncertainty.

The idea that economic policy uncertainty may affect firms' capital structures is not new. Indeed there are two alternative channels that are categorized by this study as the *supply* effect and *demand* effect. The main idea of the supply effect is that uncertainty in economic policies will deteriorate the external financing environment. When economic policy uncertainty increases, the information asymmetry between borrowers and creditors would become more severe and, at the same time, firms' future cash flows would be more volatile — indicating higher default risk. Both of these effects can lead to higher external financing costs, with firms generally lowering their leverage ratios in seeking financial flexibility. In support of this idea, recent empirical studies on the U.S. financial market document that economic policy uncertainty increases the risk premium of municipal bonds (Gao and Qi, 2012), reduces the average leverage ratio of listed firms (Cao *et al.*, 2013), and imposes

additional costs and more stringent non-price terms on bank loan contracts at both aggregate and firm level (Francis *et al.*, 2013). On the other hand, the demand effect refers to the scenario whereby firms reduce their financing demand in face of increasing policy uncertainty. Prior research documents that when firms face high political uncertainty, they will be more conservative in making investment decisions (Bernanke, 1983; Bloom *et al.*, 2007) and lower their investment level (Kang *et al.*, 2014; Gulen and Ion, 2013; Wang *et al.*, 2014). In summary, both channels assert a negative relationship between economic policy uncertainty and firms' capital structures; however, it is difficult to identify the dominating effect.

We choose Chinese listed firms as the experiment sample due to three considerations. First, as stated above, the limited research on this topic mainly focuses on the U.S. market, therefore our study in China can provide an "out-of-sample" test for the existing empirical results in a market with distinct institutional features which play key roles in affecting corporate capital decisions[1]. It is thus important to test whether the documented relationship between policy uncertainty and capital structure decisions holds in this market. Second, the regional divergences in institutional environment and firm heterogeneities, in terms of ownership structure and bank-firm relationships, are more typical in the Chinese financial market (Fan *et al.*, 2011; Allen *et al.*, 2009). These characteristics generate significant cross-sectional variations, which can deepen our understanding about the possible asymmetry of the policy uncertainty effect. Third, China is still regarded as a transition economy moving from a planned towards a market-based economy. The primary source of financing in this market is bank loans (Allen, *et al.*, 2005; Ayyagari, *et al.*, 2010); with the bank loan environment extremely sensitive to variations in government policies[2]. Thus, this provides us with an ideal experimental setting to identify the possible roles and channels through which economic policy uncertainty affects firms' capital structure decisions.

[1] Though the Shanghai Stock Exchange and the Shenzhen Stock Exchange ranked as sixth and eleventh in the world in terms of market capitalization at the end of June 2012, and China's capital market transitions to a more mature market through a process of financial reform and modernization, there are still distinct institutional features that could potentially affect corporate capital structure decisions. The most important features include: the dominating role of state ownership in the Chinese capital market ; Chinese the imposing explicit or implicit control of the volume and price of equity issuance; and banking is the primary source of financing. For more detailed discussions towards these features, we refer readers to Change *et al.*, 2014.

[2] One recent example is that, in 2009, the Chinese central government proposed a stimulus plan amounting to 4 trillion Yuan, and to fund these investments, the government required banks to increase the supply of loans dramatically. As a result, the Chinese market experienced a jump of bank loans from 4.9 trillion Yuan in 2008 to 9.59 trillion Yuan in 2009.

To measure economic policy uncertainty in China, we resort to Baker *et al.* (2013), in which they construct a scaled frequency count of articles about policy-related economic uncertainty in the South China Morning Post (SCMP) — Hong Kong's Leading English-language newspaper[3]. This economic policy uncertainty index for China (*EPU* hereinafter) follows the similar logic and methodology of the news-based index for the United States, which has a wide range of applications[4]. In a recent study, Wang *et al.* (2014) adopt the *EPU* index to investigate the influence of economic policy uncertainty on corporate investment in China.

Figure 1 plots the time series behaviour of monthly *EPU* from January, 1995 to December, 2013, as well as the quarterly GDP growth rate from Quarter 1, 1995 to Quarter 4, 2013. The left Y-axis represents *EPU* and the right Y-axis represents GDP growth rate as a percentage. It is evident that the movement of *EPU* is volatile across time, which can help us better identify the effect of *EPU* on capital structures. An interesting observation from the figure is that *EPU* tends to bump when the GDP growth rate continuously declines, suggesting that the pressure of the economy declining tends to push the government to adjust current policies. There are three peaks of *EPU* over the whole sample, i.e. at October 2001, September 2008 and November 2011, and the *EPU* remains at high ranges around these three peaks as well. One main factor that contributes to the 2001 peak is China's entry into the WTO, which generated a large amount of uncertainty as the economic policies needed to adjust to meet the requirements of marketization. From 2008 to 2009, in face of the global financial crisis, the Chinese government issued a series of macroeconomic policies to stimulate the economy. For the most recent peak, three factors contributed to the jump of uncertainty, including the Eurozone crisis, the government's stimulus policies in the presence of declining economic growth, and the election in 2012.

[Insert Figure 1 here]

[3] South China Morning Post (SCMP) is the first (founded in 1903) and largest English-language Hong Kong newspaper published by the SCMP Group, with a circulation of 104,000. Its contents cover the news regarding Hong Kong, mainland China and Asia.

[4] For instance, Pastor and Veronesi (2013) use the *EPU* index for US to study the risk premia of political uncertainty in the financial market; Kang et al. (2014) relies on this index to examine the effect of political uncertainty on firm-level investment in U.S.; Colombo (2013) explores the impact of the U.S. *EPU* index on Eurozone macroeconomic aggregates.

We apply the EPU index with a panel data set of listed Chinese firms from Quarter 1, 2003 to Quarter 4, 2013 in the empirical analysis. The estimation results show that when the lagged economic policy uncertainty increases, firm-level leverage ratios decrease on average. Moreover, we split the total leverage ratio into short-term leverage and long-term leverage ratios, and our results show that economic policy uncertainty is negatively associated with both leverage measures.

We then make two extensions to the baseline regression model. In the first extension, we find that firms from the higher marketized regions have greater leverage-uncertainty sensitivity. This result is consistent with the fact that, in China, bank lending decisions often experience intervention by local governments, especially in less marketized regions. In the second extension, we incorporate two featured firm heterogeneities, ownership and bank-firm relationship, into the regression analysis. The results show that firms owned by the state or those with a prior bank-firm relationship are better positioned to attenuate the negative impact of economic policy uncertainty on capital structures. These results are in accordance with the findings in the U.S. market, which indicate that firms with easier access to public debt markets are less sensitive to policy uncertainty (e.g., Cao *et al.*, 2013) and provide preliminarily evidence for the supply effect.

To further identify the underlying mechanism of the documented relationship between economic policy uncertainty and capital structures, we first control for the effect of investment changes. Specifically, we split our sample based on the absolute adjacent change rate of investment (0%-25%, 25%-50% and 50%-100%), and estimate our empirical model in each of these three sub-samples, respectively. The results show that the negative effect of policy uncertainty holds across all of these sub-samples in a similar qualitative and quantitative manner. We further explore the impact of economic policy uncertainty on the supply of loans at the provincial level, and find that the increase in policy uncertainty leads to a significant decrease in the supply of loans. Consistent with the evidence on loan supply, we also find a strong positive relationship between the cost of debt and *EPU*. All the above results suggest that the *supply* effect is the dominating effect that shapes the role of economic policy uncertainty.

Finally, we study the impact of *EPU* on the usage of trade credit. Since the financial development level in China is still low, commercial bank loans cannot satisfy firms' overall financing demands. Therefore, the supporting effects from trade credit may exceed that of commercial bank loans, especially for non-state firms (Allen *et al.*, 2005; Ayyagari *et al.*, 2010). In this sense, *ceteris paribus*, it is possible that firms would switch from bank loans to trade credit to meet their financing demands. This conjecture is confirmed by our empirical results that show that the measures for trading credit are positively related to *EPU*.

As aforementioned, concurrent studies on the U.S. market, particularly Cao *et al.* (2013), draw the similar conclusion that economic policy uncertainty and capital structures is negatively related. Given our sample firms are from a typical emerging market, our results complement those of the U.S. market. Further, our study is distinct from other studies in three significant ways. First, we take into account firm heterogeneities, including regional differences in marketization, ownership structures and bank-firm relationships, which are unique features of the Chinese financial market. Second, we find robust evidence that the effect of *EPU* is mainly sourced from the "supply effect", rather than the "demand effect". Third, our study is the first study that examines the relationship between *EPU* and the usage of trade credits. We conclude that firms tend to switch from bank loans (formal finance) to trade credits (informal finance) in the presence of increasing policy uncertainty.

2. Sample selection and variable definition

2.1. Sample data

We use a sample of Chinese listed companies' quarterly financial statement data to examine the effect of economic policy uncertainty on corporate financing decisions. We also use quarterly data to explore more time-series variations following Leary and Roberts (2005). Since all publicly listed companies have been required by the China Securities Regulatory Commission (CSRC) to publish quarterly financial reports since 2003, our sample period starts from the first quarter of 2003 to the fourth quarter of 2013. Based on previous studies on capital structure, we exclude 43 financial firms which are specially regulated and usually have extremely high leverage ratios. 53 "ST" (special treatment) or "PT" (particular transfer) firms which are particularly monitored due to their poor operating performances have also

been excluded[5]. After the above filtering procedure, our final sample contains 2,038 public firms listed as A-shares. We obtain the accounting data from the China Stock Market and Accounting Research Database (CSMAR) created by the Guotai'an Information Technology Company (GTA) and the data regarding firm ownership is sourced from the Chinese Center for Economic Studies (CCER) Finance Database. In addition, we use macroeconomic data, including the amount of loans, investments and deposit amounts at the provincial level for 31 provinces, as well as the GDP growth rates, loan interest rates and deposit reserve rates at the national level, from the CEIC China Database. Finally, we use the *EPU* index from Baker *et al.* (2013)[6].

2.2. Empirical model and variable definitions

We examine the impact of economic policy uncertainty on capital structures using the following baseline empirical model:

$$Leverage_{i,t} = \alpha + \beta_1 EPU_{t-1} + \gamma X_{i,t-1} + \lambda Leverage_{i,0} + \sum Quarter + \sum Industry + \varepsilon_{i,t} \quad (1)$$

where *Leverage* is the book leverage ratio, defined as total debt scaled by total assets[7]. We exclude the market leverage ratio in the current study due to the fact that before 2007, a large fraction of the shares of Chinese listed firms were non-tradable. Therefore, the market value of the firm is hard to measure accurately and difficult to compare between the pre-2007 and post-2007 periods.

[5] Aiming at enhancing corporate governance and protecting investors' interests, the CSRC introduced a particular delisting mechanism in 1998. Under this mechanism, a firm that has negative profits for two consecutive years will be designated a "ST" firm. If a "ST" firm continues to generate a loss for one more year, then it will be designated a "PT" firm and will be delisted if it cannot turn a profit within another one year. The shares of ST firms are traded with a 5% price change limit every day while the limit for normal firms' shares is 10%. Besides this, their semi-annual financial reports must be audited. The shares of PT firms can only be traded on Friday, with a maximum 5% upside limit to last Friday's closing price, but there is no limit on the downside (Bai, Liu, and Song, 2002).

[6] Available at www.policyuncertainty.com.

[7] The total debt in the Chinese context is primarily bank loans. Here, we have not included the accounts payables in calculating the total debt due to the consideration that policy uncertainty might impact the accounts payable (trade credit) differently from that of the bank loans. Thus, we study this particular effect separately in the later empirical analysis.

EPU represents one-quarter lagged economic policy uncertainty. Since the index of Baker *et al.* (2013) is monthly based, we adjust it to a quarterly observation following Gulen and Ion (2013), such that: $EPU_t=(3EPU_m+2EPU_{m-1}+EPU_{m-2})/6$.

To scale it, we divide it by 100. *X* represents a set of one-quarter lagged control variables. Specifically, we include firm size, profitability, sales growth rate (ΔSales) and tangibility. We do not include Tobin's Q to capture growth opportunity, as in Rajan and Zingales (1995) and Huang and Song (2006) among others, due to the non-tradable shares issue mentioned above. Instead, we use the sales growth rate as a proxy following Petersen and Rajan (1997) and Love *et al.* (2007).

$Leverage_{i,0}$ defines firm *i*'s initial leverage ratio. Lemmon *et al.* (2008) show that the variation in capital structures is primarily determined by factors which remain stable for long periods of time. Zhou and Xu (2012) also find that the initial leverage ratio relates positively to the future leverage ratio for Chinese firms. In this spirit, we include the initial leverage ratio as an additional control variable.

In the empirical model, we also include the quarter fixed effect and industry fixed effect to control for overall macroeconomic factors over time, seasonality in corporate financing decisions, and industry characteristics. Industry is defined based on the 22 industries classified by the CSRC.

To measure the impact of the institutional environment and firm heterogeneities on the sensitivity of leverage to *EPU*, we include the interaction terms of the marketization index, ownership and bank-firm relationship with *EPU* in the expanded models. We derive the marketization index for 31 provinces from Fan *et al.* (2011), who construct this index based on the degree of economic development, legal system and government intervention[8]. A higher score of the marketization index suggests better institutional development. Ownership is a categorical variable coded as 1 when the ultimate owner of the firm is the government or the state-owned Assets Supervision and Administration Commission, and is 0 otherwise. We

[8] This marketization index is compiled by the National Economic Research Institute of China. This index intends to capture the regional market development (including relationship between government and markets, development of non-state-owned sector in the economy, development of product markets, development of factor markets, and development of market intermediaries and legal environment (Wang *et al.*, 2014).

define the bank-firm relationship based on whether the firm has a long-term loan contract with the bank, following Houston and James (1996) and Hao *et al.* (2013). Specifically, the bank-firm relationship is a categorical variable that equals 1 if the firm has a long-term loan contract in the prior year, and is 0 otherwise. We hand-collect this information from the appendences of the annual financial reports released on the Shenzhen Securities Information Company website from 2003 to 2011[9]. We exclude the loans from the three policy banks: the China Development Bank, The Export-Import Bank of China and the Agricultural Development Bank of China.

All the financial ratio variables are adjusted by the inflation rate and winsorized at the 0.5% and 99.5% levels. We refer readers to Appendix 1 for detailed definitions of each of the variables used in this paper.

2.3. Summary statistics

Table 1 shows the descriptive statistics of the key variables at the firm-quarter level used in our empirical analysis. It can be seen that the quarterly *EPU* has a mean of 1.280, with the 25% quantile at 0.752 and the 75% quantile at 1.634 — suggesting that the variation of policy uncertainty is not smooth. The quarterly *Leverage* is 52.2% on average, but can be as low as 3.50% and as high as 2.877 as well. It is also interesting to find that the *Initial leverage* shares a similar distribution with *Leverage*. The *Ownership* dummy has a mean of 0.387, implying that more firms are non-state owned in our sample. Meanwhile, the average percentage of firms that have a prior relationship with bank is 59.80%. The marketization index has a mean of 10.511 and standard deviation of 2.657. The maximum is 15.244, while the minimum is 0.730, indicating that the divergence of institutional development across different regions is considerable.

[Insert Table 1 here]

3. Empirical results

[9] Found at www.cninfo.com.cn.

3.1. Baseline regression results

Table 2 presents the estimation results of our baseline empirical models from Quarter 1, 2003 to Quarter 4, 2013. In the first column, we estimate the model using total *Leverage* as the dependent variable. The main explanatory variable of interest, namely the lagged *EPU*, is found to be negatively associated with *Leverage* at the 1% significance level. This finding is consistent with our main hypothesis that *EPU* can lead firms to decrease their debt financing due to the *demand* or *supply* effect.

For the control variables, *profitability* is negatively correlated with the leverage ratio, and this finding is consistent with the pecking order theory and existing capital structure studies about China. In accordance with the trade-off theory, *Size* relates positively with leverage as the bankruptcy probability of large firms is low. Using the same measure for size, Bhabra *et al.* (2008) and Zou and Xiao (2006) have also drawn the same conclusion. *Tangibility* is found to be positively associated with leverage, and is thus consistent with the prediction of the trade-off theory, as firms with higher tangible assets are prone to have lower distress costs and fewer agency problems. Δ*Sales*, as a proxy for growth opportunity, is positively correlated with the leverage ratio. Though this is contrary to the predictions of the trade-off theory, this result is consistent with the feature of Chinese financial markets, in which firms with considerable growth opportunity rely primarily on bank loans to finance their projects (due to strict restrictions on equity issuance)[10]. Notably, the *Initial leverage* is positively associated with the leverage ratio, confirming the role of initial leverage in shaping the capital structure, as addressed by Lemmon *et al.* (2008).

In the second and third columns, we replace total *Leverage* with *long-term leverage* and *short-term leverage*, respectively. The results show that *EPU* relates negatively to both measures of leverage, while the magnitude is more promising for the short-term measure. Collectively, the baseline regression estimates provide strong evidence that economic policy uncertainty has a negative relationship with firms' future capital structures.

[10] Empirically, in existing capital structure research on China, the conclusions depend on the choice of proxy for growth opportunity. When Tobin's Q is used as the proxy, the coefficients generally become negative (Huang and Song, 2006; Bhabra *et al.*, 2008).

[Insert Table 2 here]

3.2. Impact of regional divergence of marketization

A typical phenomenon in China is that the degree of institutional development is uneven across regions and provinces (Fan *et al.*, 2011). In addition, the performance assessment of local government officials mainly focuses on the performance of local firms. So it is common that local governments tend to intervene to claim more bank loans for their local firms, especially in the areas with low degrees of marketization. Therefore, the financing contract relation based on profit maximization between firms and banks is destroyed. As a result, the borrowing decision of banks would become less sensitive to the overall market condition in regions with lower degrees of marketization (Fang, 2007). In the spirit of this reasoning, we thus hypothesise that the impact of *EPU* on capital structures will be less significant for firms that are negatively associated with the degree of marketization.

To test this conjecture, we first split our sample into a high marketization sub-sample and a low marketization sub-sample based on the median of the marketization index of Fan *et al.* (2011), and run the baseline regressions in both sub-samples. The results, reported in the first two columns in Table 3, show that the corporate leverage ratio for firms in the high and low marketization groups exhibit no significant difference and the coefficients on *EPU* are still significant and negative. Considering that the sample splitting, based upon the simple median value of marketization, may not reveal much information, in the third column we create three marketization dummy variables based upon the 25, 50, and 75 quantiles of the index, and interact them with the *EPU* variable. Results in the third column show a significant pattern indicating that firms from lower marketized provinces are less sensitive to *EPU*, as the coefficients of the interaction dummies, which are all positive, are relatively larger for lower quintile dummies (0.023, 0.017 and 0.002, respectively). This finding thus confirms our conjecture that government intervention would mitigate the impact of economic policy uncertainty, and is also consistent with the result of Wang *et al.* (2014), who document that

the corporate investment of Chinese firms in higher marketized regions are more sensitive to policy uncertainty[11].

[Insert Table 3 here]

3.3. Impact of ownership and bank-firm relationship

The financial system in China remains under the control of the government to a large extent, even though there have been major economic and political reforms in recent decades. One typical feature of this system is that most commercial banks are owned by the government, while the government also holds majority ownership of the state firms. This political connection ensures that state firms tend to have a priority for loans from the commercial banks[12]. Meanwhile, banks maintain a lower sensitivity of loan issuance to default risk for state firms according to Hao *et al.* (2013). Therefore, it is natural to predict that the impact of economic policy uncertainty will be mitigated for firms that are stated owned. However, on the other hand, the exposure of firms with different ownership structures to policy uncertainty risk may also be different; as state owned firms are more politically connected, they are assumed to bear more political risk. As a result, the impact of *EPU* on capital structures may be more pronounced for state owned firms. For instance, Cao *et al.* (2013) find that in the U.S., firms that have less policy risk exposure are less sensitive to the economic policy uncertainty index.

To empirically identify the impact of ownership, we interact the *Ownership* variable with *EPU* in the baseline regression model. From the first column of Table 4, we find that the coefficient on *EPU* is still significantly negative, while the interaction terms between *EPU* and *Ownership* is significant and positive, suggesting that the negative effect of *EPU* on capital structure is attenuated for firms that are stated owned.

[11] Therefore, another possible explanation of our results is that the less sensitivity of capital structure to EPU in less marketized regions sources from the investment channel, i.e. the demand effect. We leave this question for further analysis in the Section 3.4.

[12] There are various reasons for this kind of preference including political interest, information cost and government guarantee among others (Brandt and Li, 2003).

Besides the ownership structure, we also examine the impact of the bank-firm relationship. If policy uncertainty affects capital structures through the *supply* effect, i.e. decreasing loan supply and rising financing cost, it is natural to predict that this effect will be weaker for firms maintaining a relationship with banks — possibly due to less severe information asymmetry. Following Houston and James (1996) and Hao *et al.* (2013), we define the bank-firm relationship as being whether a firm has a long-term loan contract in the prior year. We then augment the baseline model by interacting the *bank-firm relation* variable with *EPU*. The estimation result reported in the second column of Table 4 shows that the bank-firm relationship indeed mitigates the negative effect of *EPU* significantly.

Overall, in this section, we find that the impact of policy uncertainty on firms with different financing capabilities and constraints are not symmetric. Our findings are also consistent with studies in U.S., which document that the impact of economic policy uncertainty on firm financing decisions is less significant for firms with public debt access[13].

[Insert Table 4 here]

3.4. Further interpretations

All the results above provide strong evidence that uncertainty in economic policy does have a negative impact on firms' capital structure decisions in China. In this section, we conduct three experiments to help identify the possible channels supporting the effect of *EPU*.

3.4.1. Controlling for investment change

It is widely documented by previous studies that policy uncertainty is negatively associated with corporate investment levels due to increasing discount rates (see, for e.g., Gulen and Ion,

[13] However, though the results are consistent with the *supply* effect hypothesis, we cannot rule out the *demand* effect.

2013; Kang *et al.*, 2014; and Wang *et al.*, 2014). Therefore, it is possible that the significant sensitivity of capital structure towards policy uncertainty is driven by decreasing financing needs (*demand* effect) rather than the direct impact on the financing environment (*supply* effect). As a response, in this section, we first control for the change of investment in our empirical analysis. Specifically, we create three dummy variables based upon the 25, 50, and 75 quantiles of the absolute rate of investment ratio change (*Cap.exp*[14]), and interact them with the *EPU* variable. If the decreasing investment caused by *EPU* contributes as the primary reason for capital structure choice, we would see that the sensitivity of capital structure to *EPU* is less significant for observations with smaller variations in investments. However, the empirical results reported in Table 5 show that the coefficients before the interaction terms of EPU and the dummy variables are insignificant. This finding, though preliminary, provides some evidence that the *demand* effect may not be the dominating effect shaping the role of *EPU* on firms' capital structure choices. This thus inspires us to explore the *supply* effect in the following context.

[Insert Table 5 here]

3.4.2. Impact of EPU on loan supply and cost of debt

In this section, we examine two possibly related channels through which economic policy uncertainty may affect firms' external financing environment — namely, the supply of bank loans and cost of debt. This experiment will provide us with a general picture regarding whether economic political uncertainty generates financial frictions for Chinese firms.

We first examine the relationship between the change of *EPU* and the loan supply at the provincial level with the following model from Quarter 1, 2003 to Quarter 4, 2013:

$$\Delta Loan_{i,t} = \alpha + \beta_1 \Delta EPU_{t-1} + \beta_2 \Delta Investment_{i,t} + \beta_3 Deposit_{i,t-1} + \beta_4 IR_{t-1} + \beta_5 DRR_{t-1} + \beta_6 GDP_{i,t-1} + \sum Quarter + \sum Province + \varepsilon_{i,t} \quad (2)$$

[14] *Cap.ex* (investment) is defined as the ratio of capital expenditure to total assets in the last period. Capital expenditure is measured as the sum of cash paid for the acquisition of fixed assets, intangible assets and other long-term assets.

where $\Delta Loan_{i,t}$ is the growth rate of loans in province *i*, which is used as a proxy for loan supply[15]; ΔEPU is the change rate of the *EPU* index; $\Delta Investment_i$ is the investment growth rate in province *i;* $\Delta Deposit_i$ is the growth rate of deposits in province *i;* ΔIR is the growth rate of the national loan interest rate; ΔDRR is the growth rate of the deposit reserve rate; and GDP_i is the GDP growth rate in province *i*. All the control variables are one quarter lagged. We also include the quarter fixed effects alone or together with the province fixed effects.

From the estimation results reported in Panel A of Table 6, we can see that when the change rate of *EPU* increases, the loan supply in the provincial level decreases on average, indicating that the loans available for firms have reduced. Given that bank loans are the most important source of funding for firms in China (Allen *et al.*, 2005), it is not surprising to see that the reduction in loan supply would force firms to adjust their capital structures.

Given that policy uncertainty has a negative impact on the loan supply, it is natural to predict that it will increase the price of debt (cost of debt). In this sense, we then test whether *EPU* increases financing costs, with the empirical model as follows:

$$Cost\ of\ debt_{i,t} = \alpha + \beta_1 EPU_{t-1} + \gamma X_{i,t-1} + \sum Quarter + \sum Industry + \varepsilon_{i,t} \quad (3),$$

where the $Cost\ of\ debt_{i,t}$ represents the average financing cost from debt for firm *i* in quarter *t*. Since the interest rate in every loan contract is not available, we instead use the amount of interest payment scaled by the total amount of debt in every quarter to proxy for the average financing cost; *X* refers to a set of one quarter lagged control variables, including the leverage ratio, firm size, profitability, tangibility, sales revenue and sales growth rate. We also include the quarter and industry fixed effects.

The estimation results are reported in Panel B of Table 6. The coefficient of *EPU* is estimated to be 0.066, which is significant at the 1% level. This positive coefficient thus provides supportive evidence that policy uncertainty increases firms' financing costs. This finding is also consistent with the study of Gao and Qi (2012), who document that political uncertainty

[15] In the Chinese context, it is a reasonable proxy for loan supply as the interest rate has always been regulated in the financial markets. The market interest rate is much higher than the regulated one. Therefore, the amount of loan mainly represents the supply side effect of debt.

is positively associated with firms' public financing costs. Collectively, all the results in Table 6 show that *EPU* has deteriorated the external financing environment for Chinese firms, thus suggesting that the *supply* effect helps explain the sensitivity of capital structures towards policy uncertainty.

[Insert Table 6 here]

3.4.3. Impact of EPU on the usage of trade credit

Besides the loans from commercial banks, trade credit is an important informal financing channel, especially for firms in developing countries (Petersen and Rajan, 1997; Fisman and Love, 2003). In the presence of bank discrimination, trade credit has also been widely used by Chinese firms as a substitute for bank loans to meet their financing demands (Ge and Qiu, 2007; Allen *et al.*, 2005)[16]. As we have documented, policy uncertainty has deteriorated firms' external financing environments. Thus, how firms would adjust their financing structures is an important and interesting question. In this sense, we are going to examine the relationship between *EPU* and the usage of trade credit with the following specification from Quarter 1, 2003 to Quarter 4, 2013:

$$TC_{i,t} = \alpha + \beta_1 EPU_{t-1} + \gamma X_{i,t-1} + \sum Quarter + \sum Industry + \varepsilon_{i,t} \quad (4)$$

where $TC_{i,t}$ represents one of two measures for the usage for trade credit. First, following Fisman and Love (2003), we define *TC* as the accounts payable scaled by total assets. Second, to capture the relative importance of trade credit compared to debt, we construct another variable (*TC-debt ratio*) as $\frac{TC}{TC+Leverage}$; *X* is a set of lagged control variables, including firm size, profitability, tangibility, leverage, sales revenue and sales growth rate. We also incorporate the quarter and industry fixed effects.

[16] According to the study of Ge and Qiu (2007), compared to state owned firms, non-state owned firms use more trade credit, and this higher usage is primarily for financing rather than transactional purposes.

As reported in Table 1, the mean value of *TC* is 8.80%, about 1/6 of the leverage ratio — suggesting that the scale of trade credit used by Chinese firms is non-negligible. We present the estimation results in Table 7. In the first column, we find that *TC* is positively associated with *EPU*, indicating that in face of increasing policy uncertainty, firms tend to raise their usage of trade credit on average. Further, we also document a positive relationship between the *TC-debt ratio* and *EPU* in the second column. This result suggests that the weight of trade credit in firms' financing plans increase with policy uncertainty. Overall, our results confirm the role of trade credit in financing and suggest that Chinese firms would adjust their capital structures in response to economic policy uncertainty. Further, the positive association between *EPU* and the usage of trade credit also provides support for the *supply* effect instead of the *demand* effect, given that the financing cost for trade credit is usually higher than that of bank loans (Ge and Qiu, 2007; Petersen and Rajan, 1997). However, due to the higher financing cost of trade credit and the fact that, compared to bank loans, trade credit is tied to the purchase of goods with less flexibility, the role of trade credit in attenuating the impact of *EPU* on capital structure may still be limited.

[Insert Table 7 here]

3.5. Robustness checks

To ensure our results are robust to sample selection bias, outliers and endogeneity issues, we conduct several robustness checks in this section.

3.5.1. Excluding utility firms

In our sample selection, we have excluded the financial firms and the "ST"/ "PT" firms. To further clean the sample, we exclude firms from the utility industries. In the Chinese context, the utility industries defined in this paper are the hydraulic industry, environmental industry and public management industry. We report the baseline regression results in Table 8. The results show that the exclusion of the firms from the utility industries has not affected the robustness of our results.

[Insert Table 8 here]

3.5.2. Excluding observations with leverage greater than one

In our sample, the maximum value of the leverage ratio is 2.877. This is unusually high and could be due to an outlier problem[17]. As a robustness check, we drop firm-quarter observations if the ratio of book leverage is greater than one, following the approach of Baker and Wurgler (2002) and Kayhan and Titman (2007). We then re-estimate the baseline regression model. From the results presented in Table 9, the conclusion that the *EPU* negatively relates to the leverage ratio remains stable.

[Insert Table 9 here]

3.5.3. Controlling for regional fixed effects

In Section 3.2, we document a strong pattern that indicated that marketization levels of different regions would affect the impact of *EPU* on capital structure decisions. It is possible that some unobservable features in the geographic location of the firms would contribute significantly to the impact of *EPU*[18]. In line with this argument, we conduct a robustness check by including the regional fixed effects in the baseline regions. The results reported in Table 10 clearly show that including the regional fixed effects has not affected our results qualitatively or quantitatively.

[Insert Table 10 here]

3.5.3. Using annual observations

In the capital structure literature, the annual sample is more commonly used. Quarterly observations may also have seasonality. Due to these considerations, we re-estimate the baseline model using an annual sample from 2003 to 2013. The annual *EPU* is defined as the average of four quarterly *EPU* measures within that year and is lagged one year in the estimation. The results presented in Table 11 show that annual *EPU* relates negatively with

[17] We would like to thank an anonymous referee for pointing this out.
[18] We are grateful to an anonymous referee for this suggestion.

the book leverage measures. The coefficients also have larger magnitudes when compared with the results in Table 2, which are based on the quarterly observations.

[Insert Table 11 here]

3.5.4. Controlling for endogeneity

EPU may not be a strictly exogenous variable, but instead be affected by firms' aggregate financing behaviours or common factors that relate to policy uncertainty and leverage decisions simultaneously. To address this consideration, following Wang et al. (2014), we use the one quarter lagged U.S. *EPU* as the instrumental variable for the current level of China *EPU* and adopt a two-stage least squares estimation procedure[19]. The first stage regression results in Panel A of Table 11 document a significantly positive relationship between the U.S. *EPU* and China's *EPU*. In the second stage, the estimated *EPU* from the first stage regression is still negatively associated with the book leverage ratio — thus mitigating the concern of endogeneity.

[Insert Table 12 here]

4. Conclusion

The determinants of corporate capital structures are an enduringly important question in the corporate finance literature. In this paper, using a recently available measure of economic policy uncertainty for China, we explore the relationship between *EPU* and Chinese firms' capital structure choices from 2003 to 2013. We find that leverage ratios are negatively associated with *EPU* on average, and this negative effect is more significant for firms from regions with higher marketization indexes, are non-state owned, or have no prior bank-firm relationship. We then provide consistent evidence that the negative relationship between capital structures and *EPU* is sourced from the deterioration of the external financing environment caused by the *EPU*. Finally, we show that firms' usage of trade credit is positively related to *EPU*, suggesting that firms tend to adjust their financing structures as a response to economic policy uncertainty.

19 The U.S. EPU is also sourced from www.policyuncertainty.com.

The results from this study contribute to the literature in a number of ways. First, our paper provides an "out-of-sample" test for recent studies on the relationship between economic policy uncertainty and firm capital structure choices using Chinese data, and we also shed new light on this topic by showing that Chinese firms tend to adjust their financing decisions between debt and trade credit in the presence of economic policy uncertainty. Second, our paper relates to the literature concerning the supply-side factors affecting a firm's capital structure. Faulkender and Petersen (2006) find that firms with public debt market access have higher leverage ratios and Cao et al. (2013) document that having public access to debt can mitigate the financial constraints imposed by policy uncertainty. In this research, we provide consistent evidence that *EPU* affects firms' capital structure choices mainly by influencing the firms' external financial environments. Finally, this paper also contributes to the growing studies examining the effect of policy uncertainty on corporate behaviour. By providing evidence about the effect of the *EPU* index on capital structure decisions for Chinese firms, our study suggests an overarching impact of policy uncertainty on financing choices.

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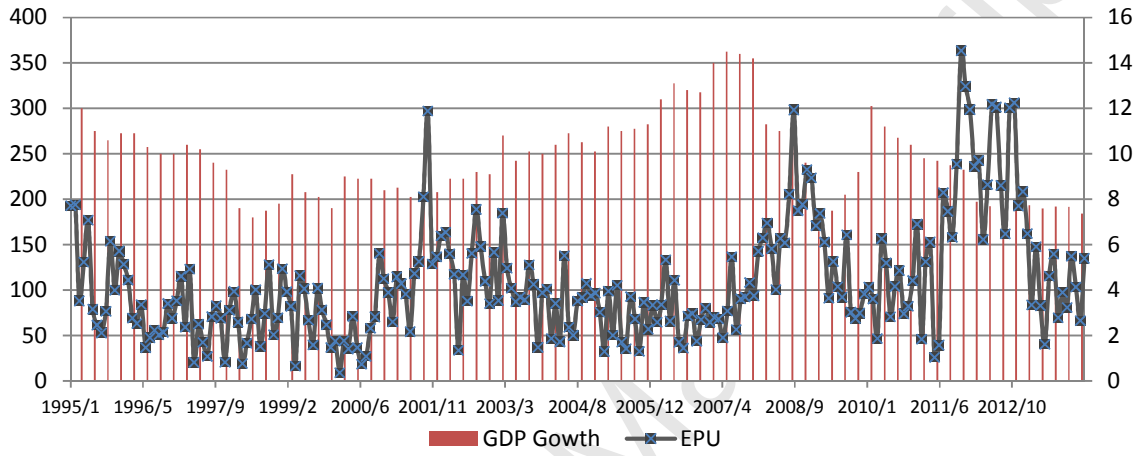

Figure 1: Historic behaviour of the EPU (01/1995-12/2013)

Note: This figure plots the monthly *EPU* from January, 1995 to December, 2013. We also plot the time series of quarterly GDP growth rate from Quarter 1, 1995 to Quarter 4, 2013. The left Y-axis represents EPU, and the right Y-axis represents GDP growth in percentage. The *EPU* is obtained from *www.policyuncertainty.com*, and the GDP growth data is from the CEIC China Database.

Table 1 Summary statistics

Note: This table provides the descriptive statistics for the key variables used in this paper. All the variables are from Quarter 1, 2003 to Quarter 4, 2013, except for the bank-firm relation, which is from Quarter 1, 2003 to Quarter 4, 2011. All corporate financial variables are winsorized by 0.5% and 99.5%.

Statistic	Observations	Mean	St. Dev.	Min	Median	Max
EPU	72,010	1.28	0.672	0.54	1.007	3.232
Leverage	67,536	0.522	0.304	0.035	0.509	2.877
Initial Leverage	71,975	0.414	0.242	0.035	0.394	2.877
Profitability	67,535	0.034	0.054	-0.255	0.027	0.417
Size	67,543	21.652	1.362	18.289	21.481	27.352
Tangibility	67,352	19.944	1.698	4.635	19.893	27.23
Sales	66,427	0.002	0.012	-0.010	0.0004	0.125
Sales revenue	67,512	0.431	0.441	0.000	0.313	10.015
Marketization index	66,456	10.511	2.657	0.730	10.840	15.244
Ownership	59,983	0.387	0.487	0	0	1
Bank-Firm relation	27,975	0.598	0.490	0	1	1
TC	66,288	0.088	0.092	0	0.068	5.982

Table 2 The effect of economic political uncertainty on firm leverage (2003-2013)

Note: This table presents the estimates from the baseline model using panel regressions. We analyze the effect of economic political uncertainty on book leverage, short-term leverage and long-term leverage. The sample period is from Quarter 1, 2003 to Quarter 4, 2013. Standard errors are reported in parentheses. *,** and *** denote the significance at the 1%, 5% and 10% levels, respectively.

	Leverage	Short-term leverage	Long-term leverage
EPU	-0.003**	-0.012***	-0.002***
	(0.001)	(0.001)	(0.001)
Initial leverage	0.516***	0.192***	0.041***
	(0.005)	(0.003)	(0.002)
Profitability	-1.293***	-0.618***	-0.023***
	(0.021)	(0.012)	(0.007)
Sales revenue	0.027***	0.0003	-0.022***
	(0.003)	(0.001)	(0.0004)
Size	0.017***	-0.011***	0.045***
	(0.001)	(0.001)	(0.001)
Tangibility	0.089***	0.089***	0.118***
	(0.006)	(0.004)	(0.002)
△Sales	0.406***	-0.218***	0.105***
	(0.087)	(0.051)	(0.030)
Constant	-0.050***	0.385***	-0.504***
	(0.019)	(0.011)	(0.007)
Quarter fixed effect	√	√	√
Industry fixed effect	√	√	√
Observations	62,403	62,391	62,124
R^2	0.275	0.167	0.292
Adjusted R^2	0.275	0.166	0.291

Table 3 The impact of marketization on the effect of economic political uncertainty (2003-2013)

Note: This table presents the analysis of marketization on the effect of economic political uncertainty on capital structures. Marketize are dummy variables based upon 25%, 50% and 75% quantiles of the marketization index in every year. Variable definitions are provided in Appendix 1. The sample period is from Quarter 1, 2003 to Quarter 4, 2013. Standard errors are reported in parentheses. *,** and *** denote the significance at 1%, 5% and 10% levels, respectively.

	Leverage		
	Low marketization	High marketization	Various degree of marketization
	≦Median	> Median	
EPU	-0.007***	-0.008**	-0.012***
	(0.002)	(0.004)	(0.003)
EPU*Marketize(>p25,≦p50)			0.023***
			(0.003)
EPU*Marketize(>p50,≦p75)			0.017***
			(0.003)
EPU*Marketize(>p75)			0.002
			(0.003)
Initial Leverage	0.488***	0.550***	0.506***
	(0.006)	(0.007)	(0.004)
Profitability	-1.270***	-1.181***	-1.213***
	(0.027)	(0.033)	(0.021)
Sales revenue	0.030***	0.008*	0.027***
	(0.003)	(0.005)	(0.003)
Size	0.030***	0.005***	0.018***
	(0.001)	(0.002)	(0.001)
Tangibility	0.047***	0.088***	0.088***
	(0.007)	(0.010)	(0.006)
△Sales	0.699***	0.401***	0.416***

	(0.109)	(0.136)	(0.085)
Constant	-0.287***	0.196***	-0.070***
	(0.021)	(0.034)	(0.019)
Quarter fixed effect	√	√	√
Industry fixed effect	√	√	√
Observations	35,859	25,512	61,371
R^2	0.256	0.278	0.275
Adjusted R^2	0.256	0.278	0.275
F Statistic	1,232.963***	378.284***	751.443***

Table 4 The impact of ownership and bank-firm relationship on the effect of economic policy uncertainty

Note: This table presents the analysis of the impact of ownership and bank-firm relationship on the effect of economic policy uncertainty. Variable definitions are provided in Appendix 1. The sample period is from Quarter 1, 2003 to Quarter 4, 2013 for the model using ownership, and is from Quarter 1, 2003 to Quarter 4, 2011 for the model using bank-firm relation. Standard errors are reported in parentheses. *, ** and *** denote the significance at 1%, 5% and 10% levels, respectively.

	Leverage	
EPU	-0.024***	-0.023*
	(0.002)	(0.014)
Ownership*EPU	0.031***	
	(0.003)	
Bank-firm relation*EPU		0.039***
		(0.012)
SOE	-0.571***	
	(0.039)	
Bank-firm relation		0.020
		(0.014)
Initial Leverage	0.429***	0.417***
	(0.006)	(0.009)
Profitability	-0.949***	-1.057***
	(0.030)	(0.054)
Sales revenue	-0.042***	0.026***
	(0.004)	(0.006)
Size	-0.002	-0.004
	(0.002)	(0.002)
Tangibility	0.177***	0.001
	(0.010)	(0.016)
△Sales	0.449***	0.613
	(0.117)	(0.214)
Constant	0.379***	0.394***

	(0.033)	(0.053)
SOE*Controls	√	
Bank-firm relation*Controls		√
Quarter fixed effect	√	√
Industry fixed effect	√	√
Observations	54,819	20,160
R^2	0.280	0.304
Adjusted R^2	0.279	0.303

Table 5 Control for investment change rate (2003-2013)

Note: This table presents the estimates from the baseline model using the subsample controlling for investment change rate (Absolute value of change rate of *Cap.ex* lower than its 25% quintile, between 25% quintile and median, and greater than the median). The sample period is from Quarter 1, 2003 to Quarter 4, 2013. Standard errors are reported in parentheses. *, ** and ***denote the significance at 1%, 5% and 10% levels, respectively.

	Leverage
EPU	-0.006***
	(0.002)
EPU*ΔCap.ex (≦p25)	−0.0001
	(0.002)
EPU*ΔCap.ex (>p25, ≦p50)	0.001
	(0.003)
Initial Leverage	0.488***
	(0.006)
Profitability	-1.307***
	(0.021)
Sales revenue	0.030***
	(0.003)
Size	0.023***
	(0.001)
Tangibility	0.095***
	(0.006)
△Sales	0.509***
	(0.086)
Constant	-0.178***
ΔCap.ex (≦p25)*Controls	√
ΔCap.ex (>p25, ≦p50)*Controls	√
Quarter fixed effect	√
Industry fixed effect	√
Observations	35,859
R^2	0.299
Adjusted R^2	0.298

Table 6 The effect of economic political uncertainty on loan supply and financial cost (2003-2013)

Note: Panel A and B present the estimates of the effect of economic political uncertainty on bank loan supply and firm's financing cost, respectively. The sample period is from Quarter 1, 2003 to Quarter 4, 2013. Standard errors are reported in parentheses. *,** and *** denote the significance at 1%, 5% and 10% levels, respectively.

	Panel A: △Loan		Panel B: Cost of debt	
△EPU	-0.016***	-0.016***	EPU	0.066***
	(0.004)	(0.004)		(0.011)
△Investment	0.0003	0.001	Leverage	-0.928***
	(0.002)	(0.002)		(0.032)
△Deposit	0.055*	0.020	Profitability	0.342*
	(0.032)	(0.032)		(0.176)
△LR	-0.236***	-0.239***	Sales revenue	0.347***
	(0.017)	(0.017)		(0.021)
△DRR	0.020	0.024	Size	-0.025***
	(0.018)	(0.018)		(0.006)
GDP	0.001***	0.001**	Tangibility	-0.588***
	(0.0003)	(0.0003)		(0.046)
			△Sales	1.059
				(0.685)
Constant	-0.060*	-0.036	Constant	1.204***
	(0.032)	(0.036)		(0.144)
Quarter fixed effect	√	√	Quarter fixed effect	√
Industry fixed effect		√	Industry fixed effect	√
Observations	1,152	1,152	Observations	54,370
R^2	0.368	0.393	R^2	0.091
Adjusted R^2	0.363	0.372	Adjusted R^2	0.090

Table 7 The effect of economic political uncertainty on trade credit usage (2003-2013)

Note: This table presents the analysis of the effect of economic political uncertainty on firms' usage of trade credit. Variable definitions are provided in Appendix 1. The sample period is from Quarter 1, 2003 to Quarter 4, 2013. Standard errors are reported in parentheses. *,** and *** denote the significance at 1%, 5% and 10% levels, respectively.

	TC	TC-debt ratio
EPU	0.001**	0.011***
	(0.001)	(0.001)
Leverage	0.088***	-0.154***
	(0.001)	(0.004)
Profitability	-0.121***	-0.011
	(0.007)	(0.021)
Sales revenue	0.054***	0.143***
	(0.001)	(0.003)
Size	0.003***	0.007***
	(0.0003)	(0.001)
Tangibility	-0.041***	-0.248***
	(0.002)	(0.006)
△Sales	0.060**	0.304***
	(0.030)	(0.083)
Constant	-0.080***	0.051***
	(0.007)	(0.018)
Quarter fixed effect	√	√
Industry fixed effect	√	√
Observations	62,150	55,809
R^2	0.200	0.202
Adjusted R^2	0.200	0.201

Table 8 Robustness Check 1: The effect of economic political uncertainty on firm leverage excluding utility firms (2003-2013)

Note: This table presents the estimates from the baseline model using panel regressions. We analyze the effect of economic political uncertainty on book leverage, short-term leverage and long-term leverage. The sample period is from Quarter 1, 2003 to Quarter 4, 2013. Utility firms are excluded. Standard errors are reported in parentheses. *,** and *** denote the significance at 1%, 5% and 10% levels, respectively.

	Leverage	Short-term leverage	Long-term leverage
EPU	-0.004**	-0.012***	-0.001***
	(0.001)	(0.001)	(0.001)
Initial leverage	0.517***	0.194***	0.043***
	(0.004)	(0.003)	(0.002)
Profitability	-1.346***	-0.632***	-0.053***
	(0.020)	(0.012)	(0.007)
Sales revenue	0.028***	-0.003*	-0.022***
	(0.003)	(0.002)	(0.0003)
Size	0.018***	-0.011***	0.022***
	(0.001)	(0.0005)	(0.0003)
Tangibility	0.094***	0.091***	0.114***
	(0.006)	(0.004)	(0.002)
△Sales	0.483***	-0.227***	0.070***
	(0.086)	(0.052)	(0.031)
Constant	-0.068***	0.387***	-0.444***
	(0.018)	(0.011)	(0.007)
Quarter fixed effect	√	√	√
Industry fixed effect	√	√	√
Observations	61,474	61,461	61,202
R^2	0.288	0.171	0.287
Adjusted R^2	0.287	0.171	0.286

Table 9 Robustness Check 2: The effect of economic political uncertainty on firm leverage (leverage less than 1) (2003-2013)

Note: This table presents the estimates from the baseline model using panel regressions. We analyze the effect of economic political uncertainty on book leverage, short-term leverage and long-term leverage. The sample period is from Quarter 1, 2003 to Quarter 4, 2013. Firms with leverage greater than 1 are excluded. Standard errors are reported in parentheses. *,** and *** denote the significance at 1%, 5% and 10% levels, respectively.

	Leverage	Short-term leverage	Long-term leverage
EPU	-0.011***	-0.011***	-0.002***
	(0.001)	(0.001)	(0.001)
Initial leverage	0.381***	0.140***	0.033***
	(0.003)	(0.002)	(0.002)
Profitability	-1.080***	-0.538***	-0.069***
	(0.015)	(0.011)	(0.008)
Sales revenue	0.034***	-0.002	-0.035***
	(0.002)	(0.001)	(0.001)
Size	0.047***	-0.003***	0.023***
	(0.001)	(0.0004)	(0.0003)
Tangibility	0.055***	0.082***	0.117***
	(0.004)	(0.003)	(0.002)
△Sales	0.506***	-0.205***	0.078***
	(0.058)	(0.044)	(0.031)
Constant	-0.655***	0.234***	-0.457***
	(0.012)	(0.009)	(0.007)
Quarter fixed effect	√	√	√
Industry fixed effect	√	√	√
Observations	60,250	60,237	59,986
R^2	0.397	0.148	0.296
Adjusted R^2	0.397	0.147	0.296

Table 10 Robustness Check 3: The effect of economic political uncertainty on firm leverage (with regional fixed effects) (2003-2013)

Note: This table presents the estimates from the baseline model using panel regressions. We analyze the effect of economic political uncertainty on book leverage, short-term leverage and long-term leverage. The sample period is from Quarter 1, 2003 to Quarter 4, 2013. The province fixed effects are used as a robustness check. Standard errors are reported in parentheses. *,** and *** denote the significance at 1%, 5% and 10% levels, respectively.

	Leverage	Short-term leverage	Long-term leverage
EPU	-0.003**	-0.011***	-0.002***
	(0.001)	(0.001)	(0.001)
Initial leverage	0.492***	0.183***	0.043***
	(0.004)	(0.003)	(0.002)
Profitability	-1.306***	-0.573***	-0.054***
	(0.020)	(0.012)	(0.008)
Sales revenue	0.038***	-0.003*	-0.033***
	(0.003)	(0.002)	(0.001)
Size	0.023***	-0.009***	0.023***
	(0.001)	(0.0005)	(0.0003)
Tangibility	0.079***	0.097***	0.105***
	(0.006)	(0.004)	(0.002)
△Sales	0.470***	-0.207***	0.053***
	(0.082)	(0.050)	(0.030)
Constant	-0.198***	0.344***	-0.472***
	(0.018)	(0.011)	(0.007)
Quarter fixed effect	√	√	√
Industry fixed effect	√	√	√
Region fixed effect	√	√	√
Observations	60,724	60,724	60,517
R^2	0.303	0.172	0.312
Adjusted R^2	0.302	0.172	0.311

Table 11 Robustness Check 4: The effect of economic political uncertainty on firm leverage using annual data (2003-2013)

Note: This table presents the estimates from the baseline model using panel regressions. We analyze the effect of economic political uncertainty on book leverage, short-term leverage and long-term leverage. The sample period is from 2003 to 2013. Standard errors are reported in parentheses. *,** and *** denote the significance at 1%, 5% and 10% levels, respectively.

	Leverage	Short-term leverage	Long-term leverage
EPU	-0.017**	-0.024***	-0.003***
	(0.004)	(0.002)	(0.001)
Initial leverage	0.503***	0.189***	0.037***
	(0.009)	(0.005)	(0.003)
Profitability	-1.531***	-0.708***	-0.059***
	(0.042)	(0.025)	(0.014)
Sales revenue	0.021***	-0.001	-0.036***
	(0.005)	(0.003)	(0.002)
Size	0.017***	-0.010***	0.022***
	(0.002)	(0.001)	(0.001)
Tangibility	0.080***	0.088***	0.109***
	(0.013)	(0.008)	(0.004)
△Sales	0.897***	-0.014	0.130*
	(0.221)	(0.134)	(0.073)
Constant	-0.001	0.379***	-0.452***
	(0.038)	(0.023)	(0.012)
Industry fixed effect	√	√	√
Observations	16,049	16,046	15,971
R^2	0.281	0.170	0.292
Adjusted R^2	0.280	0.168	0.291

Table 12 Robustness Check 5: Controlling for endogeneity (2003-2013)

Note: This table presents the estimates from the baseline model using 2-stage regressions. We use the economic policy uncertainty index of the U.S. as an IV to perform the first stage. In the second stage, we analyze the effect of economic political uncertainty on book leverage, short-term leverage and long-term leverage. The sample period is from Quarter 1, 2003 to Quarter 4, 2013. Utility firms are excluded. Standard errors are reported in parentheses. *, ** and *** denote the significance at 1%, 5% and 10% levels, respectively.

	Panel A: First Stage		
	EPU		
U.S. EPU	0.970***		
	(0.204)		
Constant	0.072		
	(0.254)		
Observations	44		
R^2	0.349		
Adjusted R^2	0.334		
	Panel B: Second Stage		
	Leverage	Short-term leverage	Long-term leverage
EPU (predicted)	-0.007**	-0.037***	0.005***
	(0.003)	(0.002)	(0.001)
Initial leverage	0.517***	0.191***	0.043***
	(0.004)	(0.003)	(0.002)
Profitability	-1.345***	-0.628***	-0.054***
	(0.020)	(0.012)	(0.007)
Sales revenue	0.028***	-0.003*	-0.036***
	(0.003)	(0.002)	(0.001)
Size	0.018***	-0.009***	0.022***
	(0.001)	(0.0005)	(0.0003)
Tangibility	0.093***	0.083***	0.116***
	(0.006)	(0.004)	(0.002)
△Sales	0.485***	-0.222***	0.071***
	(0.086)	(0.052)	(0.031)
Constant	-0.068***	0.391***	-0.445***
	(0.018)	(0.011)	(0.007)
Quarter fixed effect	√	√	√

Industry fixed effect	√	√	√
Observations	61,474	61,461	61,202
R^2	0.288	0.176	0.287
Adjusted R^2	0.287	0.176	0.287

Appendix 1: Variable definitions

EPU	Based on the economic political uncertainty index of Baker *et al*. (2013). We transform it into quarterly observations following: $EPU_t = (3EPUI_m + 2EPUI_{m-1} + EPU_{Im-2})/6$. Then divided by 100. Annual EPU equals to the average of quarterly EPU.
Leverage	Ratio of total debt to total asset.
Short-term leverage	Short-term debt (≦1year) divided total assets.
Long-term leverage	Long-term debt (>1year) divided by total assets.
Marketization index	From Fan et al. (2011).
SOE	Equals 1 when the ultimate owner of the firm is the state and 0 otherwise.
Bank-firm relation	Equals 1 if a firm has a long-term bank loan contract in the prior year and 0 otherwise.
Cost of debt	Interest cash payment divided by the total amount of debt.
Sales revenue	Operating income divided by total assets.
Size	Log of total assets.
Initial leverage	First observation of the leverage ratio for a firm. For firms listed before 2003, it is the first leverage ratio observation from the semi-annul financial report, while for firms listed after 2003, it is the first leverage ratio observation from the quarterly financial report.
Profitability	ROA, measured as net income divided by total assets.
∆Sales	$logSales_t - logSales_{t-1}$
Tangibility	Tangible asset after depreciation and depreciation provision divided by total assets.
Cap.ex	Capital expenditure divided by the one period lagged total assets. Capital expenditure is measured as the sum of cash paid for the acquisition of fixed assets, intangible assets and other long-term assets.

△Loan	Growth rate of loans in a province.
△EPU	Growth rate of EPU.
△Investment	Growth rate of total investment in a province.
△Deposit	Growth rate of the amount of deposit in a province.
△LR	Growth rate of the loan interest rate.
△DRR	Growth rate of the deposit reserve rate.
TC	Trade credit, measured as the account payable divided by total assets.
TC-debt ratio	Account payable divided by the sum of account payable and total debt.